



## PRESIDENT'S MESSAGE

# The Future of APS and Physiology

Shu Chien

In the August 1990 issue of *The Physiologist* (33:73, 1990), I reported on the new happenings in the American Physiological Society. Now I would like to share with you the thoughts of APS Council and its committees, as well as my personal reflections, regarding the future directions of APS. The actions taken by APS will have an impact on physiology as a discipline and affect all of us who are interested in physiology.

The Long Range Planning Committee (LRPC) was charged with planning for the future of APS. As a result of the committee's deliberations during the past three years, including discussions with many physiologists, LRPC Chairman Ernst Knobil presented to the Council a "White Paper on the Future of Physiology and the Role of the American Physiological Society in It." This thoughtful report entitled "What's Past is Prologue" was accepted by Council at its October 1990 Meeting. The full report and Council's actions were published in the December 1990 issue of *The Physiologist* (33:161, 1990). I would like to take this opportunity to discuss the major points raised in the report and to invite your participation in charting the future of the Society. There is a questionnaire included with this issue. Please take a few

moments to complete the form on page 12 and give us your valuable opinions.

## The Science and the Images of Physiology

The LRPC White Paper pointed out that, although American physiology and APS are thriving, a deep malaise permeates the physiological community regarding the future of the science and of the institutions that represent it. The report also noted that this malaise has been extant since the founding of the APS more than a century ago. Although the long history of the malaise tends to lessen our anxiety, we must make every effort to identify the root of the malaise and endeavor to eliminate it. We must not be complacent, because the malaise is more intense today and the symptoms are more evident than ever before. As pointed out in the White Paper, an important problem we face is that there is a *perception* that physiology no longer represents the cutting edge of biological science and that APS no longer represents the most active scientific community. I emphasize the word *perception* because I do not believe this is the case, but at the same time I agree that the perception really does exist and that it has affected the institutions where physiology is taught and researched. Some departments of physiology have changed their names and many are recruiting scientists with no training background in physiology. To alter this perception and its consequences, we must work hard to ensure that physiology and APS are at the forefront of biomedical sciences and transmit the right image to the scientific community, including university administrators and young scientists-to-be. There is an urgency to these efforts because

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## Posters Supporting Animal Research Available from Vision Research Group

The Association for Research in Vision and Ophthalmology (ARVO) has developed two posters depicting the impact of using animals in eye and vision research.

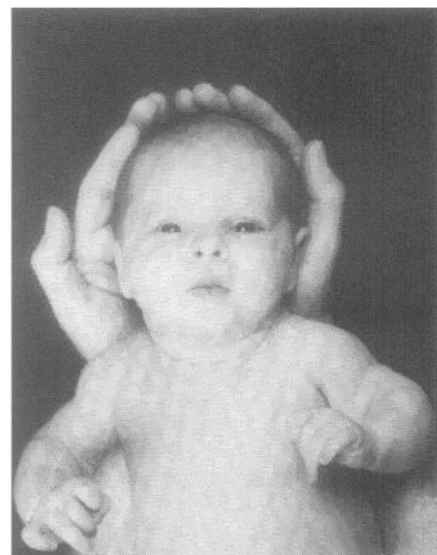
The posters were developed with the idea that ophthalmologists, optometrists, academicians, and other interested individuals would display them to initiate discussions with patients, students, and colleagues on the importance of using animals in research.

One poster shows a premature infant with retinal eye disease and has the caption: "Eye Disease Comes From Birth. Her Hope, From Animal Research." The other poster shows a protester holding a sign saying "Stop Animal Research" and has the caption: "Short-sightedness. One Vision Problem Even We Can't Help."

The posters were designed by David Wojdyla, who created the award winning posters for the Foundation for Biomedical Research. Copies are available to non-ARVO members for \$5.00 each, \$20.00 for six posters, and \$1.00 each for 25 or more. To order, contact

ARVO, 9650 Rockville Pike, Bethesda, MD 20814-3991. Tel: 301-571-1844; Fax: 301-571-8311. ☎

### HER EYE DISEASE COMES FROM BIRTH. HER HOPE FROM ANIMAL RESEARCH.



Every year 3500 premature babies are born with a retinal eye disease that can lead to blindness. Results of recent animal research show promise of reducing their risk of vision loss by half. For stories like this, that mean a brighter outlook, THE ASSOCIATION FOR RESEARCH IN VISION AND OPHTHALMOLOGY

## The Institute of Electrical and Electronics Engineers, Inc.

The IEEE-USA Precollege Education Committee has created a Directory of Volunteer Opportunities in Precollege Mathematics and Science Education for Engineers and Scientists, a guide to education-related programs that aim to improve math, science, and technology education at the precollege level. The programs listed are established, ongoing efforts that are nationally coordinated but operate locally in different cities. They are heavily dependent upon volunteers at the local level. IEEE believes that technical professionals are well equipped to make the kind of positive contributions that help to diminish the crisis in precollege education. Volunteering can be a satisfying and enjoyable experience. Single copies of the brochure may be obtained from IEEE-USA, 1828 L Street, N.W. Suite 1202, Washington, DC 20036-5104. Tel: 202-785-0017.

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(continued from page 1)

the century-old malaise has been reinforced by dramatic advances in molecular and cell biology and the erroneous notions by some that the so-called "new biology" is unrelated to physiology.

A characteristic strength of physiologists is their ability to make use of new technological and conceptual advances as they become available. Past examples include the uses of radioactive isotopes, electrophysiological techniques, electron microscopy, bioengineering analysis, new biochemical methods, and many others. The newly developed concepts and techniques in cell and molecular biology are no exceptions; they are being increasingly used by physiologists as part of their research arsenal. This is evident in the papers published in physiological journals such as the *American Journal of Physiology* and in the presentations at APS meetings, e.g., at the APS-sponsored symposia in the 1991 FASEB meeting.

In applying "new biology" to physiology, it should be stressed that the research goal of physiologists is to solve physiological problems of interest, and we can use molecular and cell biological approaches among others as the tools, i.e., as the means rather than the end. Molecular biology by itself tends to be reductionistic in its approach. Molecular biologists, however, are becoming increasingly aware of the need to apply the knowledge they have gained to elucidate physiological functions. It is only through such application that the physiological significance of molecular and cellular biological research can be established. We must not think of molecular biology and physiology in terms of an either-or situation. We should, instead, aim at integrating these and other scientific disciplines to understand how the body functions as a whole.

Physiologists are in an ideal position to undertake such interdisciplinary studies and to lead the next revolution of biomedical research, i.e., to integrate the knowledge of molecular and cell biology into the study of organismic functions. To me, this is what is meant by the recommendation in the White Paper that we define physiology as integrative biology, the biology of the future. Thus, the aim is to emphasize the role of physiology in integrating heterogeneous approaches in many disciplines ranging from molecules to man, with the ultimate goal of understanding how organisms function at all levels, including molecules, cells, tissues, and organs.

As pointed out in the White Paper, "In the final analysis, the perception of physiology departments by their academic communities and their success in attracting new generations of young scientists will depend on the impact of their research efforts and not on that of their labels." Therefore a simple definition of physiology as integrative biology would not do very much by itself. In this connection, I would like to stress that Council has no intention of changing the name of the American Physiological Society, although it feels that the definition as recommended by the LRPC is a useful one. What is really needed is for all of us working in physiological research to aim for the same goal: an understanding of how the body functions by integrating all the knowledge ob-

tained through the use of the different concepts and methodologies at our disposal, from molecular biology to systems physiology, from comparative physiology to human pathophysiology. If we do this, the perception by others will automatically change and physiology will once again be in the center stage of biomedical science.

For over 100 years we have not been able to shake the malaise, and yet somehow we have managed to grow steadily. Perhaps the strong impact provided by the explosive development of molecular and cell biology is exactly what is needed to jolt physiology and APS out of its doldrums. We are already making some progress, but we need to redouble our effort at this critical junction in the evolution of biological sciences.

## APS Conferences

While the most important element in the future of physiology resides in the research work done by physiologists, APS can play a significant role in fostering such activities. In this regard, the recommendation by the LRPC coincides with Council's plan to organize superlative meetings on specific topics at the forefront of research. These meetings will be known as "APS Conferences." They will provide a forum for scientific exchange among researchers at the cutting edge of physiological sciences. The aim is to make these conferences the best there is on the chosen topics. Two such conferences have already been organized for the fall of 1992: "Integrative Biology of Exercise" (organized by Peter Wagner, September 22-26, Colorado Springs, CO) and "The Cellular and Molecular Biology of Membrane Transport" (organized by Lazaro Mandel, Douglas Eaton, and William Agnew, November 4-8, Orlando, FL). The organization of these meetings is well under way and there is every indication that both will be of superb scientific quality. We will maintain and improve the high standards expected for these two meetings and make these conferences internationally recognized and respected. We will use our resources to invite the most active scientists to present their latest findings. It is our hope that the conferences will be the flagships of the APS and will be attractive to all scientists, especially the young ones.

To fulfill our goals, we need the input from as many people as possible in planning and organizing the APS Conferences. I sincerely hope that the APS Sections and Special Interest Groups, as well as individual APS members, will generate ideas for the scientific programs of these conferences. The proposals will be rigorously reviewed and evaluated by the Program Committee, and possibly another suitably constituted body, to ensure that we attain the highest standards of excellence and fulfill the objectives of the program. Because of the need to reserve meeting places and to make other preparations, it is necessary to plan these meetings at least two years in advance. Therefore, we welcome your suggestions for APS Conferences from 1993 and onward. The current plan is to have two conferences per year until 1995. Based on evaluations of the meetings, changes will be made in future years, including frequency. I am very excited by the

prospect of these APS Conferences, which will meet the scientific needs of the biomedical research community, improve the image and perception of APS, and promote physiology as a discipline. Your input will be much appreciated.

### APS Membership

For APS to be truly representative of physiology, we need the participation of all active physiologists. For APS to continue moving ahead with vigor, we need young scientists to join the Society. While APS membership has continued to grow, reaching 7,000 for the first time this year, there are still many faculty members of departments of physiology who are not APS members. The best way to recruit new members is to make APS membership attractive to the prospective candidates through better programs and activities, such as the APS Conferences mentioned above. There are, however, ancillary factors that may affect the decisions of individuals to join. To facilitate the membership application process, the Membership Committee is considering a number of changes designed to simplify the preparation of an application without compromising the evaluation process. I recently wrote a membership-drive letter to the chairmen of departments of physiology, outlining the programs and activities of APS, listing the benefits of membership, and asking them to each propose one or more new members from their non-member faculty. I would like to invite every APS member to help in recruiting new members, especially young scientists and students. It should be noted that APS has decided to waive the first-year dues for new student members. Membership application forms are available from the APS Membership Office. I sincerely hope you will help in this membership drive.

The White Paper suggested the establishment of a new category of membership to be named "The Fellows of the American Physiological Society," with the aim of recognizing distinguished accomplishments by the most active workers in physiological research. An important intent of this proposal is to induce non-APS members who have been engaged in physiological research of high distinction and are in the prime of their careers to join APS. Although the intention is excellent, putting it into practice may be difficult. We might be successful in inducing a limited number of Fellows to join but cause disenchantment in a larger number of existing members who may be equally qualified but are not so recognized. In view of these potential problems, Council has referred the LRPC proposal on "Fellows" to the Membership Committee for its consideration and recommendation. Your input on this proposal will be much appreciated.

One possible alternative that I personally propose is to provide nonmember invited speakers at APS Conferences and APS-sponsored symposia with a one-year free membership (the application would still be processed by the Membership Committee). In this way, we may help to attract outstanding nonmember scientists interested in physiology to join our Society.

### APS Governance

In recent years, APS has undergone a continuous evolution of its structure and function in response to the changing time. The governance of the Society has been strengthened by the establishment of Sections. With the aim of broadening its representation, Council has undergone significant changes in the way it is constituted. The number of Councillors has been increased from four to six, and the nomination procedure has been modified so that each Section would have no more than two seats. In order to further broaden the representation of the Council and streamline the governance of the Society, Council accepted the recommendation of the LRPC that the Section Advisory Committee, which is composed of the chairs of the individual Sections, become the Council. Currently, there are twelve Sections and six councillors. It probably is not practical to increase the number of Councillors to twelve because with the President, President-Elect, Past President, and *ex officio* members, the size of the Council would exceed the workable range. Council has appointed a Task Force on Governance to consider the process and implications of implementing the recommendation that the Section Advisory Committee become the Council and to develop the procedures by fall 1991. Again, input by the membership will be very valuable.

### APS and FASEB

In the August 1990 Editorial I reported on the relationship between APS and the Federation of American Societies for Experimental Biology (FASEB). As indicated in the White Paper, over the last few decades, APS had been increasingly dissatisfied with its relationship with FASEB, especially with regard to the monetary assessment, the lack of flexibility in the spring meeting and the noninclusion of many biomedical research societies. Upon the recommendation of LRPC, Council passed a resolution in June 1989 that, in order for APS to remain a member of the Federation, FASEB must develop a plan to essentially eliminate the assessment and to become more broadly representative of the biomedical research community. In response to the APS resolution and the deepening dissatisfaction of the American Society of Biochemistry and Molecular Biology (ASBMB), the FASEB Board revised the Constitution and Bylaws effective July 1, 1990. Fundamental changes were made in the structure and operation of FASEB, with the aims of broadening its representation of the biomedical research community and better serving the needs of the constituent societies.

During the past few months, FASEB has been rapidly moving in the direction planned. The new FASEB Executive Director, Michael Jackson, has worked closely with the Executive Officers Advisory Committee (composed of the Executive Officers of the constituent societies) to evaluate all FASEB departments. There has been a significant streamlining of the administrative operation. Steps are being taken to make all FASEB functions (except for administrative office and public affairs) self-sufficient. The assessment to

constituent societies has been changed to a dues structure that will be progressively reduced to \$10-15 per member by 1994. To make it easier for new member societies to join, they will be charged annual dues of \$10 per member from the beginning.

The revitalization of FASEB faced a serious problem when ASBMB Council passed a resolution in June 1990 that ASBMB planned to inform FASEB in writing in November 1990 of its intention to withdraw from FASEB by November 1991 if FASEB did not become a looser confederation and attract other organizations such as the American Society for Cell Biology (ASCB) and The Biophysical Society. The withdrawal of ASBMB would have dealt a severe blow to the new FASEB, and greatly hindered the recruitment of new societies. APS has worked hard, in concert with FASEB, to keep ASBMB in FASEB and to recruit new member societies. During the APS meeting in Orlando in October 1990, Council invited ASBMB President, Dan Lane, and several members of their Council to discuss this issue; the exchange was very fruitful. On December 1, 1990, I was invited to meet with the ASBMB Council, as were FASEB President Thomas Edgington and Michael Jackson. It was most gratifying that our efforts bore fruit and ASBMB decided to stay in FASEB.

On December 9, 1990, Tom Edgington, Dan Lane, ASBMB Past President Bill Lennarz, ASBMB Executive Director Chuck Hancock, American Association of Pathologists President Dorothy Bainton, and I were invited to meet with ASCB Council. We all expressed the view that the new FASEB is indeed a Federation that serves its constituent members and that it is important to have this organization to provide a strong voice for the biomedical research community. It is especially noteworthy that the Biochemists spoke extremely positively about this. ASCB Council will consider the invitation to join FASEB during this Meeting and at their next Council Meeting in Spring 1991. By recruiting new societies we can make FASEB an organization truly belonging to the biological research scientists and a federation representing us with unity and visibility on the Hill and elsewhere.

Thus, at the time of the writing of this editorial (December 11, 1990), things are beginning to look up for the future of FASEB and the unity of the biomedical research community. I hope we will have more good news next spring.

## Spring Meetings

As a result of the restructuring of FASEB, scientific meetings will be initiated by Member Societies rather than by FASEB. From 1991 to 1997, APS is already committed to hold our spring meetings with several other societies in FASEB. We are exploring the possibility that some non-FASEB member societies may wish to meet jointly with APS during these years. APS is actively pursuing the possibility of meeting with other societies either within or outside the FASEB framework in 1998 and onward. It is to be noted that, because of the necessity to book meeting sites many years in advance, many societies have already scheduled their meetings through 1999. For this reason, we must start these ar-

rangements well in advance of the meeting year. A subcommittee has been formed to develop procedures for these efforts.

## Relations with Other Medical Research Advocacy Groups

The White Paper pointed out that the Council of Academic Societies (CAS) of the Association of American Medical Colleges (AAMC) is very effective in lobbying and influencing legislation benefiting the biomedical sciences and recommended that the APS representatives to CAS be members of the APS Council. This recommendation was adopted by Council.

In dealing with various advocacy groups for medical research funding, however, we must be cognizant of their priorities. A case in point is the report released last fall by the Institute of Medicine (IOM) of the National Academy of Science. The report stated that the trend of federal support of biomedical research during the last 20 years has favored research grants over training and facilities and recommended that this "imbalance" be corrected by switching substantial funds from the primary conduct of research to training and facilities. FASEB and APS disagreed with the premise of the report that there is such an imbalance. We opposed the IOM recommendations, because adequate funding of research not only is essential for the advance of biomedical knowledge but also plays an indispensable role in the training and recruitment of new scientific investigators. APS has gone on record to express its view on this matter. Another example is the position taken by the Association of American Universities (AAU) on indirect costs, a position that is primarily from the viewpoint of institutional administrators and is at variance with that of the bench scientists.

About one year ago, ASCB, ASBMB, and The Biophysical Society decided to hire a lobbyist to promote research funding, with a primary focus on investigator-initiated grants. Initially APS was not certain whether this might detract from the efforts of FASEB. There is now indication that this new approach has contributed to the recent increase in the NIH budget for the funding of new and competing renewal grants. Therefore, it is apparent that the use of multiple approaches can have synergistic effects, as long as the goals are the same.

In the final analysis, investigator-initiated research is the backbone of the entire biomedical research program. If there were no such research activities and their principal investigators, there would be no training programs and there would be no need for physical facilities. The entire biomedical research community should band together to demand an increase in the total funding for biomedical research, with appropriate apportioning of the increase according to priorities set by the biomedical research community, especially the bench scientists. APS is working with FASEB and other societies to achieve this goal. It is hoped that the entire biomedical research community can work together on this, rather than undermining investigator-initiated research in favor of other purposes. Only by cooperation can we have



a sufficiently strong voice and enough influence to secure adequate support for biomedical research.

### Planning for the Future

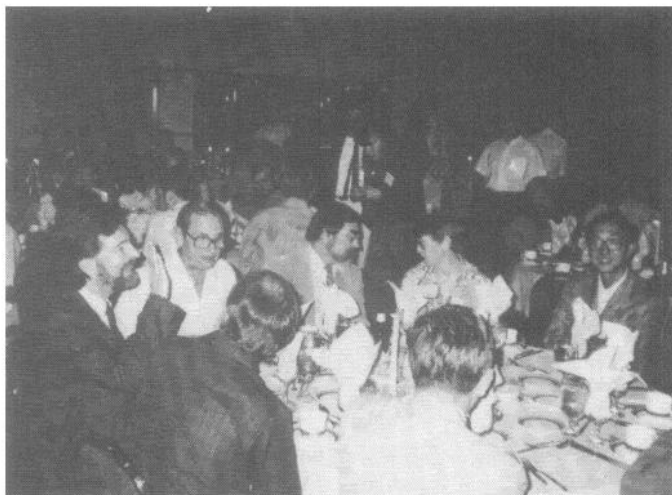
As the American Physiological Society enters into its second century, it is in critical need of thoughtful and foresighted planning of its future. At this time of dynamic change in the content, opportunity, and climate of biomedical sciences, we must use our resources wisely to enhance our existing strengths and to initiate new programs for our continued growth and development. Therefore, planning for the future is a high-priority item for APS. As a first step, the Council has asked the chairpersons of the various committees and of the Sections to participate in the next phase of our long-range planning process by suggesting new and expanded programs to be undertaken to enhance the image of the Society and the discipline of physiology. The vitally important process of planning for the future requires the active participation by all Society members. Please fill out the questionnaire and send in your ideas, so that the Council can be guided by a broad cross-section of opinions.

It should be noted that this article is written to address the points raised in the LRPC White Paper. There are other important issues that warrant further discussions, such as publications, minority programs, education, and the use of animals in research. Your opinions on these other issues will also be appreciated. It is my firm belief that, by working together to plan for our future, we can make physiology and APS healthy and strong. ⑤

APS Council



Row 1 (L-R) Stanley Schultz, Norman Staub, Shu Chien, Vernon Bishop, Leonard Jefferson, David Ramsey. Row 2 (L-R) John Cook, Peter Wagner, Brian Duling, Beverly Bishop, Norman Alpert, Ernst Knobil, Allen Cowley, Carl Gisolfi.



Comparative Physiology Banquet

## 1990 Specialty Conference

### A Resounding Success

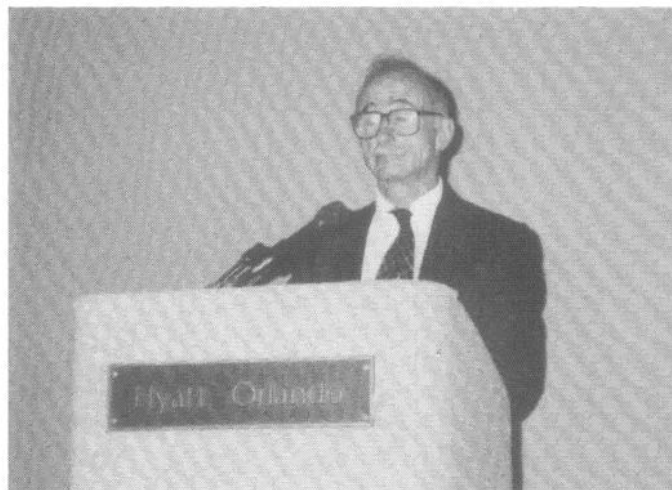
Comments overheard in Orlando: "Great meeting!" "Best get-together in memory!" The meeting's praises were also found in letters received in the APS office. According to **John Pappenheimer**, "The Orlando Meeting was TOPS, and I cannot remember a more enjoyable large meeting of this kind." **Knut Schmidt-Nielsen** commented, "the program was uniformly of very high quality and it was among the most interesting meetings I have ever attended." **Arthur DuBois** wrote, "The theme of Comparative Physiology brought together a group of people with common interests, to exchange ideas and look for common denominators. It worked."

Many will long remember the 1990 APS Meeting as among the most enjoyable of their careers. Seasoned veterans mingled with young colleagues in an informal atmosphere of conviviality to share results, ideas, and methods. The Society, and especially the Comparative Physiology Section, owe **Larry Crawshaw** (and his organizing committee representing APS), the American Society of Zoologists, the Canadian Society of Zoologists, the Comparative Respiratory Society, and the Society of Experimental Biology (UK) a strong vote of thanks for their superb efforts in bringing about the success of the meeting.

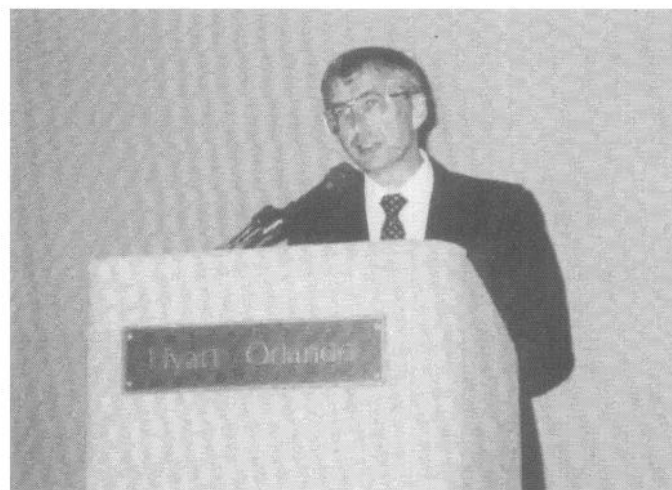
Many features fostered interaction and discussion. Evening debates and lectures, along with tutorials, workshops, symposia, and plenary presentations, stimulated much interesting dialogue among attendees. For the first time, all contributed papers were posters, with topics ranging from the ecological to the molecular, in forms from bacteria to whales. An air of enthusiasm reigned in the exhibit hall, and spontaneous, animated caucuses were continually observed.

The large contingent of young investigators attested to the health and promising future of comparative physiology. It was especially gratifying that the Scholander Award competition attracted no less than 42 contestants, all of whom showed outstanding creativity and professionalism in their research and presentations. Fourteen young, minority scientists were selected from a national pool to receive travel awards from APS and NIDDK. Paired with mentors selected from the APS membership, these young scientists were made welcome at an evening reception, introduced around, and encouraged to attend tutorials on obtaining grants and publishing, as well as all other activities.

Marvin Bernstein, Secretary  
Comparative Physiology Section



John R. Pappenheimer, Banquet Speaker



Albert Bennett, Chairperson, Comparative Physiology Section



Larry Crawshaw, Chairperson, Organizing Committee

## 1990 Scholander Award Winners

At the Spring 1990 FASEB Meeting in Washington, Comparative Physiology Section Chairman Albert Bennett presented the Scholander Award for best paper by a young investigator, and a check for \$100, to **Robert Furilla** of New Mexico State University. Furilla earned his PhD at the University of British Columbia, then moved to Dartmouth Medical School where he carried out his prize-winning work on "The Influence of Venous CO<sub>2</sub> on Ventilation in Garter Snakes." Congratulations to Furilla from the entire Section membership, and thanks to all the Scholander Award contestants at FASEB 1990 for their participation! Accompanying presentation of the award, John B. West of the University of California, San Diego, reminisced about Pete Scholander, for which the Section conveys its thanks.

Selecting the Scholander Award recipient at the Fall 1990 APS meeting in Orlando was a tough call. An unprecedented 42 presentations were judged by a representative panel of judges, who collectively spent dozens of hours viewing posters and interviewing authors. The posters' excellence made the job harder but more gratifying. At the Scholander Award banquet, **Al Bennett** presented the award and a \$100 check to **Jon F. Harrison** of the University of British Columbia for his poster, "Ammonium, Total Urate, and Titratable Acid Excretion in Acid-Loaded Locusts." A first runner-up certificate was also presented to **Agnes M. A. Lacombe**, also of the University of British Columbia, for her poster, "Roles of Adrenal Catecholamines during Forced Submergence in Pekin Ducks." The entire Section congratulates Harrison and Lacombe and thanks all the contestants for entering and for contributing to the high quality of the scientific program.

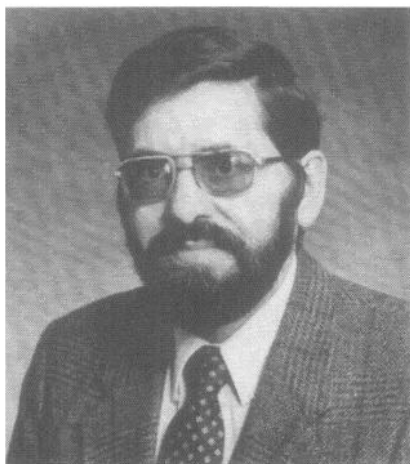
After the awards presentation, the membership was treated to a talk by **John Pappenheimer** in remembrance of the late Hermann Rahn and Pete Scholander. As befits a postprandial presentation, Pappenheimer also summarized some of his recent interesting work on intestinal glucose transport. The Section thanks Pappenheimer for sharing his reminiscences and results.



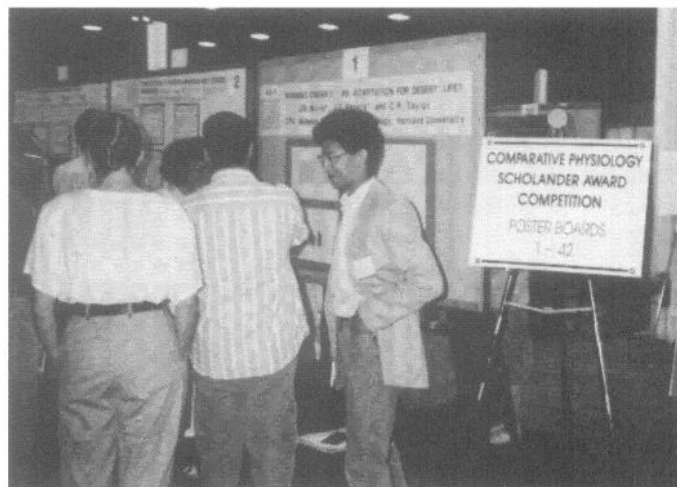
Albert Bennett and Agnes M. A. Lacombe



Albert Bennett and Jon F. Harrison



Robert Furilla



Scholander Award Poster Presentations



## "60 Minutes" Tapes Segment At APS Specialty Meeting

Morley Safer and a CBS crew from the television show "60 Minutes" spent a day at the APS specialty meeting in Orlando taping environmental shots for a future program segment discussing possible effects on humans of mercury used in dental amalgam.

The research of Maurice Vimy, a dentist, Fritz Lorscheider, a physiologist and member of APS, and Anne Summers, a microbial geneticist, resulted in new evidence of possible damaging effects on the body, rekindling the 150-year-old controversy on the possible dangers of using silver dental fillings.

Vimy and Lorscheider, members of the medical faculty at the University of Calgary, and Summers, who is at the University of Georgia, presented their findings, which are based on animal studies, at the APS meeting.

The taping at Orlando was done to give the segment the flavor of a scientific meeting. Laboratory scenes and discussion of the findings were taped at Calgary.

## APS/NIDDK Travel Fellowships for Minority Students

An APS/NIDDK-sponsored travel fellowship program provided an opportunity for 14 highly qualified minority students and scientists to attend the 1990 APS Specialty Meeting in Orlando, Florida. To enhance their experience at the meeting, the Fellows were introduced to mentors at an orientation reception preceding the scientific sessions. Throughout the week the mentors assisted the fellows in selecting the appropriate scientific sessions and introduced them to investigators. **Phillip L. Rayford**, University of Arkansas, addressed the group at a closing luncheon, providing them with an inspirational talk designed to encourage them in their careers.

Recipients of the 1990 Fall Fellowships were **A. Dianne Bustamante** (New Mexico State University), **Maria Castro** (Ponce School of Medicine), **Maria L. Florez-Duquet** (New Mexico State University), **Annette Gabaldon** (New Mexico State University), **Carlos A. Jimenez-Rivera** (Universidad Central del Caribe), **Cindy La Neave** (University of Texas at El Paso), **Ora E. Lockley** (Albany State College), **Lorraine H. Manciet** (University of Arizona), **Carnel Morgan** (University of Michigan), **Elizabeth S. Quintana** (New Mexico State University), **Maria Rodriquez de Salzberg** (Instituto de Neurobiologia, PR), **Arnold L. Silva** (University of Arizona), **Mildred Morales Velez** (University of Puerto Rico), and **Alice Renee Villalobos** (University of Arizona).



Morley Safer and Maurice Vimy are briefed by "60 Minutes" program producer Patti Hassler (partially hidden by cameraman) before a taping begins.



APS Executive Director Martin Frank gives "60 Minutes" interviewer Morley Safer an APS T-shirt featuring the Society's "Research Animals Save Lives" logo.



NIDDK Fellows with Eleanor Ison-Franklin (Row 1, 4th from left), Phillip L. Rayford (Row 1, 5th from left), Gabriel Navar (Row 2, 4th from left)

## 1990 APS Orlando Meeting

The October 6-10, 1990 meeting of the American Physiological Society held in Orlando, Florida marked a continued transition of the annual fall meeting to a specialty format. This year's meeting organized by a committee chaired by Larry Crawshaw focused on the topic "In Search of Physiological Principles: The Use of Animal Diversity and Novel Technology." With a comparative physiology orientation, the APS was joined by four participating societies: Comparative Respiratory Society (CRS); American Society of Zoologists (ASZ), Division of Comparative Physiology and Biochemistry and Division of Comparative Endocrinology; Canadian Society of Zoologists (CSZ), Comparative Physiology and Biochemistry Section; and Society of Experimental Biology (SEB), all sections.

The scientific program consisted of 33 invited sessions and a total of 63 sessions derived from volunteered abstracts. These sessions included 15 symposia, 13 lectures, 3 tutorial workshops, and 2 debates.

The 576 volunteered papers submitted for the Orlando meeting were programmed in 61 poster sessions and 2 slide sessions (for the Comparative Respiratory Society). With five participating societies, many of the abstracts received listed affiliation with more than one society. Of the 576 abstracts received, 448 (77.8%) listed APS affiliation, 140 (24.3%) listed ASZ affiliation, 31 (5.4%) listed CRS affiliation, 42 (7.3%) listed CSZ affiliation, and 35 (6.1%) listed SEB affiliation. Female scientists were first authors on 128 volunteered papers or 22.2% of the total. Scientists residing outside of the Americas contributed 54 abstracts. Industrial scientists accounted for 4 volunteered abstracts. Scientists in US government laboratories contributed 33 abstracts. Of the abstracts received, 233 (40.4%) acknowledged research support from government agencies (US and foreign) and 107 (18.6%) received support from various private foundations, associations, or companies.

Table 1 shows the programming of

categories. A total of 266 abstracts were submitted for the topic categories associated with the theme, representing 39.2% of the total abstracts. In addition, many of the abstracts submitted to the other topic categories had a comparative orientation. The Cardiovascular and Respiratory Sections of the Society programmed 77 (13.44%) and 63 (11.0%) papers, respectively. For the Respiratory Section, this represents a significant decrease from 1989 when the meeting was held jointly with the American Thoracic Society.

Of the 420 abstracts designating departmental affiliation, 111 or 19.2% were from departments of physiology or physiology/ biophysics. Biology departments were designated on 115 abstracts, representing the role comparative physiology plays in those departments.

The large number of abstracts submitted for this meeting suggests that thematic or specialty meetings can play an important role for the Society. Every indication suggests that the Orlando meeting was scientifically successful.

**Table 2 Author Affiliations of Volunteered Papers**

Department	No. of Papers	% Total
Physiology	103	17.8
Physiology/Biophysics	8	1.4
Medicine	26	5.0
Biology	115	19.7
Pharmacology	6	1.0
Surgery	10	1.7
Anesthesiology	16	2.8
Pediatrics	9	1.5
Biochemistry	2	0.3
Pathology	1	0.2
Other	124	21.5
No department listed	156	27.1
<b>TOTAL</b>	<b>576</b>	<b>100.0</b>

**APS Fall Meeting**

Status	Number
<b>Members</b>	<b>521</b>
<b>Nonmembers</b>	<b>143</b>
<b>Students</b>	<b>210</b>
<b>Total Scientific</b>	<b>885</b>
<b>Guests</b>	<b>22</b>
<b>Exhibitors</b>	<b>40</b>
<b>Total</b>	<b>947</b>

**Table 1 Volunteered Papers by Physiological Category**

Category	1990 Papers		1989 Papers	
	No.	Percent	No.	Percent
Theme: Comparative Aspects	65	11.3	—	
Theme: Zoology	19	3.3	—	
Comparative Respiratory Society	50	8.7	—	
Comparative (general)	92	16.0	5	1.0
Aging	2	0.3	3	0.6
Calcium	4	0.6	—	
Cell & General	3	0.5	15	3.1
Endocrines & Reproduction	21	3.6	11	2.3
Environmental, Temperature and Exercise	48	8.3	26	5.4
Gastrointestinal & Liver	9	1.6	17	3.5
Heart & Circulation	77	13.4	81	16.7
History	0	0	2	0.4
Membranes & Transport	22	3.8	13	2.7
Metabolic Physiology	6	1.0	7	1.4
Muscle	28	4.9	21	4.3
Neurobiology & Neural Biophysics	15	2.6	4	0.8
Regulatory & Integrative	9	1.6	6	1.2
Renal & Electrolyte	15	2.6	9	1.9
Respiratory System	63	11.0	156	32.2
Water & Electrolyte	13	2.3	4	0.8
Teaching Materials & Methods	10	1.7	3	0.6
Other	5	.09	12	2.5
<b>TOTAL</b>	<b>576</b>	<b>100.0</b>	<b>485</b>	<b>100.0</b>

## Sections Special Functions

APS/FASEB Spring Meeting — April 21-15, 1991

### Cardiovascular

Dinner  
Tuesday, 6:30 PM  
Grand Ballroom Salon B

### Cell and General Physiology

Banquet and Lecture  
Tuesday, 6:30 PM  
Pittipat's Porch

### Comparative Physiology

Steering Committee Meeting  
Tuesday, 8:00 AM  
Zurich Room

### Environmental and Exercise Physiology

Steering Committee Meeting  
Monday, 7:30 AM  
State Room

Breakfast Meeting  
Tuesday, 7:30 AM  
Stockholm/Amsterdam Room

### Epithelial Transport

Group Meeting  
Tuesday, 8:30 AM  
Georgia World Congress Ctr

### Gastrointestinal Physiology

Reception and Award Lecture  
Tuesday, 6:30 PM  
Imperial Ballroom Salon A

### History of Physiology

Luncheon  
Wednesday, 12:00 NOON  
Omni, Glenmar Room B

### Hypoxia

Group Meeting  
Tuesday, 12:00 NOON  
Georgia World Congress Ctr

### Neural Control and Autonomic Regulation

Social  
Monday, 4:30 PM  
Copenhagen Room

### Renal Physiology

Dinner: Outlook 91  
Wednesday, 7:00 PM  
Peachtree Ctr Athletic Club

### Respiration

Business Meeting  
Wednesday, 12:00 NOON  
Georgia World Congress Ctr

Dinner  
Wednesday, 6:00 PM  
The High Museum  
Georgia Pacific Ctr

### Teaching of Physiology

Dinner  
Sunday, 6:30 PM  
Trinidad Room

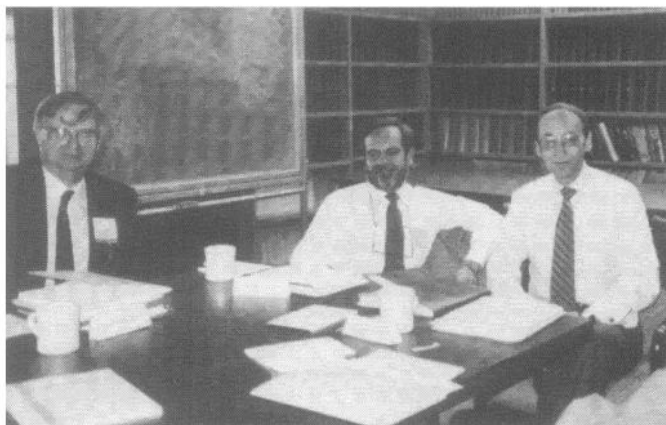
(Functions are at the Marriott Marquis Hotel unless otherwise indicated.)

## Workshop on Integrative Study in Physiology and Medicine

The 6th Annual Workshop on Integrative Study in Physiology and Medicine will be held at the APS/FASEB Spring Meeting, Sunday, April 21, 1991. The program includes "Dialogue on Integrative Science" by Joseph Engelberg, University Kentucky, and "Medical Case History, Presentation and Analysis" by Allan Mines, University of California, San Francisco, followed by a working discussion lunch. *Registration and Information* may be obtained from Dr. Wayne W. Carley, Department of Biology, Lamar University, P.O. Box 10037, Beaumont, TX 77710-0037. Tel: 409-880-8260.

## Introducing . . .

## Luis Reuss and Roger Green



(L-R) Roger Green, Luis Reuss, and Gerhard Giebisch

At the November 1990 board meeting of *Physiological Reviews* in Bethesda, the outgoing editor, **Gerhard Giebisch**, introduced **Luis Reuss** (University of Texas at Galveston), who will begin serving in January 1991 as editor of *Physiological Reviews*, and **Roger Green** (University of Manchester), who took over the position of chair of the European Editorial Committee from **Brian Jewell** in July of this year.

Reuss received his MD from the University of Chile at Santiago where he joined the Department of Experimental Medicine. He became a Fogarty Fellow and a Louis G. Welt Fellow in the Department of Medicine at the University of North Carolina at Chapel Hill where he joined the faculty. He later moved to the Department of Physiology and Biophysics at Washington University in St. Louis. Currently he is the chairman of the Department of Physiology and Biophysics at the University of Texas. Reuss' research interests include epithelial transport, membrane transport of ions and water, and ionic events in the control of the cell cycle. Reuss has served on the editorial boards of the *AJP: Cell Physiology*, *AJP: Gastrointestinal and Liver Physiology* (of which he was an Associate Editor), *Journal of General Physiology*, *Contemporary Nephrology*, and *Cellular Physiology and Biochemistry*.

Green received his MD from Sheffield University and joined the Department of Physiology at Manchester in 1966. He was named professor of physiology in 1981, and he became chairman of the combined Department of Physiological Sciences in 1990. Green's main research interests are in renal physiology, especially transport of fluid and anions in the proximal tubule, renal function in pregnancy, and effects of atrial natriuretic factor. He has served as editor, as well as Distributing Editor, of the *Journal of Physiology (London)* and as editor and chairman of *Clinical Science*.

The APS thanks both Gerhard Giebisch and Brian Jewell for their valuable contributions to *Physiological Reviews* over the past six years and for bequeathing to the new editors such a highly rated and successful journal. ☺

# Questionnaire Regarding the Future of Physiology and APS

(Please use additional sheets for comments)

	<u>Agree</u>	<u>Disagree</u>	<u>No opinion</u>
<b>1. <u>The Science and the Images of Physiology</u></b>			
Physiology should be defined as "integrative biology"	_____	_____	_____
A deep malaise permeates the physiology community	_____	_____	_____
If there is such a malaise, it is curable	_____	_____	_____
Physiologists should be conversant about new biology	_____	_____	_____
Physiologists should incorporate concepts and methods of new biology	_____	_____	_____
Physiologists should continue to work on organ and system levels	_____	_____	_____
<b>2. <u>APS Conferences</u></b>			
Superlative APS Conferences should be a high priority for APS	_____	_____	_____
The optimum number of APS Conferences should be _____ per year			
<b>3. <u>APS Membership</u></b>			
A new category of Fellows in APS should be created	_____	_____	_____
Non-member invited speakers should be given 1-year free membership	_____	_____	_____
<b>4. <u>APS Governance</u></b>			
Section Advisory Committee should become the Council	_____	_____	_____
The optimum number of Councillors should be _____			
Some of the Sections should be combined	_____	_____	_____
If yes, suggestions:			
<b>5. <u>APS and FASEB</u></b>			
APS should remain in FASEB	_____	_____	_____
APS should be active in recruiting societies to join FASEB	_____	_____	_____
<b>6. <u>Spring Meeting</u></b>			
APS should meet with different societies as needed	_____	_____	_____
If yes, suggestions:			
<b>7. <u>Funding Advocacy</u></b>			
APS should advocate primarily the funding of investigator-initiated research grants	_____	_____	_____
<b>8. <u>Your General View of APS</u></b>			
APS is moving in the right direction	_____	_____	_____
<b>9. <u>Planning for the Future</u></b>			
Please suggest new and expanded programs to be undertaken (use additional sheet):			

Name (optional): \_\_\_\_\_ Position: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Please return by March 31, 1990, to: APS Membership Services, 9650 Rockville Pike, Bethesda, MD 20814-3991.





Hormone transport  
in blood: emerging  
concepts

Mechanisms of en-  
docrine hypertension

Neurotransmitter re-  
lease in brain nuclei  
controlling CV and  
pituitary function

Vascular speciali-  
zation in endocrine  
organs

Atrial natriuretic factor and cardio-  
vascular regulation

Calcitropic hormones and cardiovas-  
cular function

**Interactions of the  
Endocrine  
and  
Cardiovascular  
Systems  
in health and disease**

**September 29 -  
October 3, 1991  
San Antonio, Texas**

Hormonal signal  
transduction and  
regulation of vascu-  
lar smooth muscle

Neurohumoral mech-  
anisms in bulbo-  
spinal control of the  
circulation

Interrelationship  
between insulin re-  
sistance and hyper-  
tension

Neuropeptides in blood flow regulation

Regulation of angiogenesis

Identification and treatment of cardio-  
vascular disease in diabetes

**Special Notice**

The IUPS Commission on Gravitational Physiology will meet simultaneously with APS.

*Symposia include:*

- Gravitational Cell Physiology • Current Concepts in Gravitational Physiology
- Physiology of High G-Loadings • Mathematical Modelling for Gravitational Physiology

☐ Please send me a preliminary program and pre-registration information for the APS Conference on Interactions of the Endocrine and Cardiovascular Systems, September 29 - October 3, 1991.

Please complete and mail this coupon to:

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## News From Senior Physiologists

### Letters to Horace W. Davenport

**Réne Girerd** said he gave up physiological research for economic reasons (research grants and salary) in 1962 and that he does not regret it. He finished a residency in pathology and until his retirement served as a hospital pathologist. He remains a medical examiner of his county, working one or two days a week. Girerd has traveled widely, being one of the first to visit China in 1978, and at the age of 60 he added parasailing to parachuting, water skiing, and scuba diving. At 70 he began wind surfing. He says he is "an unrepentant hedonistic dilettante who has applied his compulsive tendencies to many diversified professional as well as humanistic activities rather than heroically digging in one limited sphere of activity."

**J. Russell Elkinton** writes that after retiring in 1972 as a professor of medicine at the University of Pennsylvania and as editor of *Annals of Internal Medicine* he moved with his English-born wife to live in Herefordshire, England, where he did some writing primarily in the area of medical history, including co-authoring a book entitled, *The Quaker Heritage in Medicine*.

"Since our return to the U.S. five years ago to be near our children and grandchildren in Massachusetts, I have finished writing a set of occasional essays from family and professional life that has been published under the title, *Bird on a Rocking Chair*. This year my wife Teresa and I moved into the Carleton-Willard Village, a continuing care retirement community in Bedford, MA, where we have celebrated our golden wedding anniversary as well as my 80th birthday."

"Although I retired from Wellesley College in 1976," writes **Virginia Mayo Fiske**, "I continued to work in the laboratory there, taking on a series of senior honor students through 1983. All of them are now active MDs or PhDs. Our work was published in *Endocrinology* in 1984."

She reports that her husband died in 1987, bringing her very happy marriage of 49 years to a close. "Once again I returned to Wellesley, delighted to find that Dr. Janet Darrow, whose research interests are in photobiology as were mine, had joined the department. We worked together briefly trying to measure very low blood levels of the hormone melatonin at different times in the photoperiod. Much as I regretted it, I decided this past summer that I should pull out of the laboratory permanently."

### Letters to David Greene

"I continue as Professor of Medicine at New York University School of Medicine as well as seeing patients one day a week in the Faculty Practice suite," writes **Herbert Chasis**, who added, "At present, I am writing a book that will attempt to describe my life wearing three hats: research scientist, medical school teacher, and medical practitioner."

"I am still active as Director of Experimental Cardiology and Scientific Development at the Huntington Medical Research Institutes," reports **Richard J. Bing**. "I have an active laboratory with people from abroad, and I am trying to finish my book on 'History of Cardiology.' I am also editor-in-chief of a journal which tries to combine fundamental with clinical cardiology, the *Journal of Applied Cardiology*. My main scientific interest is in the role of the endothelium, a highly competitive field."

"You asked me if I had any words of wisdom to impart to the younger generation, and it would be: Try to work on a subject or in a field which is not dominated by fixed ideas. Once a fixed scientific idea has taken over, it needs an awful lot to dislodge it."

"My second profession, music, has been doing reasonably well. I have written two symphonies, many choral works, string quartets and piano trios, and as benefits an older citizen, I am now writing a bit for the organ. A few

things have been published. I agree with Shakespeare that 'the sound and the fury signifies nothing.' On the other hand, the sound and the fury make life worthwhile."

**M. C. Chang** reports that "I retired eight years ago and do not carry on any scientific research, but I still have an office at the Worcester Foundation to do some reading, writing, and talking to old and young scientists at the Institute. Science progressed so fast, but I still try very hard to learn what is going on in reproductive biology."

"I do not have any bright ideas to tell the younger scientists. I can only advise them to work hard and not to miss the chance. If one has any ideas, bright or stupid, just try to do an experiment to prove it. You may hit something no one else realized before. To do science is to satisfy one's curiosity. Fame and money are only by-products."

**John W. Boylan** writes from Guilford, CT, that he retired in 1986 and admits to enjoying it. "For a compulsive reader, retirement is something of a blessing. I've sailed through 18th Century literature (mostly English) and am well into the 19th now. . . . For diversion I work on some still unpublished mss of work I did before I retired."

### Letter to Roy O. Greep

"Since I retired about four years ago and became Emeritus here at Colorado State University, I have found no time to be bored," reports **Charles G. Wilber**. "I have been able to keep a modest office and laboratory going on campus. I still serve on the Editorial Board of the *American Journal of Forensic Medicine and Pathology*."

"I sympathize with the young and middle aged physiologists who are still in the academic whirl. Universities have changed markedly (and not always for the better) even during the short time since I retired. The attacks on academic freedom are no longer subtle but rather are blatant. The enormities being perpetrated upon experimental scientists in the life sciences by the enthusiastic

(fanatical) animal 'rights' crowd will have an adverse impact on all aspects of health and human welfare. The critical importance of competent application of science to the needs of society is regularly emphasized to me every time that I advise a judge, lawyer, police investigator, social worker, or environmental manager on matters physiological.

"Observing how my past graduate students have established themselves and are contributing to new knowledge is more satisfying than a munificent annuity ever could be."

## Letter to Steve Horvath

**Richard A. Morin** reports that he has continued to work on a full-time basis as the Director of Facilities at SUNY-Buffalo and is enjoying it more than ever.

**Maurice McGregor** reports from Montreal that he is chairman of a Council for the Evaluation of Technology in Health of the Providence of Quebec. In this context he said he is writing more than ever with the object of producing a sort of consumer report for the guidance of health authorities and doctors.

"I am still at Columbia's College of Physicians and Surgeons," writes **Gabriel G. Nahas**, "but I have left the pristine waters of physiology for the murky ponds of pharmacology-toxicology in the United States and France. I am preparing for the publication of the fifth edition of my book, 'Keep Off The Grass,' which has been translated into five languages." A year ago he took on cocaine with another volume, "Cocaine: The Great White Plague."

"In the lab I have been studying the effects of cocaine as an indirectly acting sympathomimetic amine, stimulating the sympathoadrenal and renin angiotensin systems. Our finding that selected calcium antagonists, such as diltiazem or dihydropyridines, neutralize the acute cardiac toxic lethal effects of cocaine has received little attention. Anyway, we will pursue our efforts in the lab and on the word processor."

## Letter to John T. Reeves

"I reached the age of 70 and that is 'my' scientific achievement," writes **Robert S. Pogrund** from Sun City, AZ. "My physiological intuition has led me to assume the following: 1) atherosclerosis can be reversed with proper nutrition (forget the corned beef sandwiches and lemon creme pies); 2) geographic relocation for better climate control is required; 3) a change of lifestyle is required to escape real or perceived professionally associated stresses (publish or perish, extramural grant support, committee memberships, exceeding levels of competence, etc.); 4) adaptation to a regular program of physical exercise to stimulate angiogenesis or development of a collateral vascularization (current program is bicycling at least 10 miles per day, 2 hours of racquetball 3 times a week, aerobic exercise class 3 times a week, and 3 miles of brisk walking every other day); and 5) cessation of monetary worries and laughing over the possible sources of income—even if none is forthcoming (consulting for the legal profession can be fun, and having fun is essential to maintain the integrity of the immune system)."

## Letter to Helen M. Tepperman

"I keep my scientific interests alive by attending scientific and clinical meetings and trying to keep up with the current scientific literature," pens **Demetrios Triantaphyllopoulos**. "In addition, I returned to old, dear interests of mine, which I was unable to pursue during my active years because of a lack of time. I read some of the marvelous books of Konrad Lorenz and Lewis Thomas, the autobiography of Werner Heisenberg and books on history. The last such book I read was on the history of Venice by Jan Morris. The amorality of these remote times which led to the fourth crusade and the atrocities of the Turks is not too different of the amorality of our times.

"Finally, I try to keep fit by swimming about three times a week and taking one hour walks in my neighborhood. ☞

## The Ohio Physiological Society 1990 Meeting

On October 19, 1990, 55 physiologists and their students gathered at Ohio University in Athens for the 5th Annual Meeting of the Ohio Physiological Society organized by John Howell. The theme was "Cellular Processes Underlying Systemic Function and Dysfunction." The program began by focusing on skeletal muscle injury, repair, and response to training and detraining, with talks by **William Stauber** (West Virginia University) and **Robert Staron** (Ohio University). **Stanley Schultz** (University of Texas at Houston) brought us up-to-date on cellular mechanisms of sodium absorption by epithelia. Talks on polypeptide effectors of gastric H/K ATPase and on mechanisms of ion and water balance in insects by **John Cuppoletti** (Cincinnati) and **Mary Chamberlin** (Ohio), respectively, rounded out our consideration of transport. After lunch and a lively poster session (19), **Nick Sperelakis** (Cincinnati) and **Bruce Biagi** (Ohio State) directed our attention to the role of calcium channels in the ischemic heart and in pituitary cells.

In the business meeting the 6th Annual Meeting was announced, namely, September 20, 1991, at the University of Cincinnati, to be hosted by the Department of Physiology and Biophysics and organized by Nick Sperelakis. Steps were discussed to broaden the appeal of the Society to neurobiologists in the state and to biologists in some of the state's smaller institutions, as well as ways in which we might speak effectively in the interest of physiology at the state and national levels. Notwithstanding the interest in broadening the Society's appeal, those who attended the meeting applauded the accessibility to colleagues. Sponsorship of the 1990 meeting was provided by Forma Scientific of Marietta, OH, and by the Department of Zoological and Biomedical Sciences, the College of Arts and Sciences, and the College of Osteopathic Medicine, all of Ohio University.

John Howell

## NIH Conflict of Interest Meeting Has Early Ending

The National Institutes of Health (NIH) had planned an all-day public meeting to discuss proposing rules regarding conflict of interest in the conduct of clinical evaluation of commercial products. The meeting, however, lasted less than a half-day.

Approximately 250 people from the scientific community showed up on the NIH campus for the meeting scheduled to run from 8:30 a.m. to 4:30 p.m. Two-and-a-half hours later, including a 45-minute coffee break, the meeting was adjourned, as none of the attendees wanted to make any more comments or ask any more questions, largely because of the lack of response from an NIH panel to the comments and questions being asked.

George Galasso, associate director for extramural affairs at NIH, opened the program by saying the meeting was an information-gathering session before proposing rules. James Mason, assistant secretary for health at the U.S. Department of Health and Human Services, reported that when conflict of interest rules were first proposed in September 1989, the department received 751 letters of comments. Those proposed rules were recalled in December 1989.

The meeting then heard four brief presentations as to the views of a clinical scientist, university administrator, industry, and academia-industry ties concerning conflicts of interest. Following the coffee break a three-person panel representing NIH and the Alcohol, Drug Abuse, and Mental Health Administration was seated to respond to audience comments and questions. But few responses were made by the panel members, causing some attendees to wonder if anyone from the government was listening.

The concerns voiced by the attendees regarding proposed rules included the following: will the now limited proposal for rules become broader after

*(continued on page 17)*

## Two High Courts to Hear Animal Activists Arguments About Jurisdiction, Standing

Two supreme courts—the U.S. Supreme Court and the Oregon State Supreme Court—have agreed to hear animal activist arguments regarding a jurisdictional dispute concerning the Silver Spring monkeys and a bid to gain standing for the right to challenge decisions by institutional animal care and use committees.

Lower courts in both cases have ruled against the activists.

### U.S. Supreme Court

The U.S. Supreme Court has agreed to review a decision that allowed the National Institutes of Health (NIH) to transfer from a state court to a federal court a lawsuit filed by animal activists seeking to prevent the euthanasia of the Silver Spring monkeys.

Should the activists win their appeal, the suit will be sent back to a Louisiana state court where proceedings will be renewed. If the court rejects the appeal, the activists' legal fight on this issue would be over.

The Silver Spring monkeys have been the center of legal disputes for nearly 10 years following a complaint to police by Alex Pacheco, a volunteer worker at the Institute of Behavioral Research, who charged that 17 monkeys were being mistreated in the Silver Spring, MD, laboratory. The complaint resulted in a police raid and confiscation of the monkeys.

Only four of the monkeys are now the subject of the legal dispute, as five have been moved to the San Diego Zoo and eight have either died or were euthanized. The four are housed at the Delta Regional Primate Center in Louisiana.

The jurisdictional dispute dates back to 1988 when NIH announced plans to euthanize three deafferented monkeys, whose conditions had deteriorated, and then conduct experiments to learn about rehabilitation therapy for persons who suffered a stroke, brain or spinal cord damage, or similar injuries.

Before NIH could act, however, a lawsuit to block the euthanasia was filed in Louisiana state court by Pacheco, People for the Ethical Treatment of Animals, International Primate Protection League, and Louisiana in Support of Animals. But NIH had the suit transferred to a federal court and eventually to the 5th U.S. Circuit Court of Appeals, which ordered the suit dismissed.

In dismissing the suit the appeals court ruled that the three types of injury claimed by Pacheco and the three organizations were not sufficient to sustain a suit in a federal court.

The injuries claimed were “permanent disruption of their (Pacheco and the three organizations) personal relationships with the monkeys,” impairment of their commitment to prevent inhumane treatment of animals, and impairment of their mission “as advocates for the rights of the Silver Spring monkeys, who have no means of protecting themselves.”

The issue to be determined by the Supreme Court is whether NIH should have been permitted to remove the lawsuit from the state court.

### Oregon Supreme Court

The Oregon Supreme Court has agreed to hear an appeal of a lawsuit filed by the People for the Ethical Treatment of Animals (PETA) against the University of Oregon.

The suit, filed two years ago, challenges the procedures by which the university's institutional animal care and use committee authorized research involving



three barn owls. The research, supported by NIH, examines how barn owls use sound to visualize the terrain below, work that could lead to devices that would enable the blind to "see" based on sound.

Both the Marion County Circuit Court and the state Court of Appeals have ruled that PETA had no legal standing to contest the committee's decisions. The courts also said PETA had suffered no harm as a result of the decisions.

Animal activists groups have been denied standing in the federal courts, having had their appeals rebuffed by the U.S. Supreme Court after their petitions were rejected by both federal district and appeals courts. Standing is the recognition granted by a court to private citizens and organizations as plaintiffs with legally protectable and tangible interests at stake in civil litigation.

William M. Samuels

## British Scientists Support Animal Research Declaration

The British Association for the Advancement of Science has developed a declaration in support of the use of animals in research.

Eleven scientific organizations and six Nobel Laureates are among the original signatories to the declaration that outlines the issues animal researchers face in the United Kingdom. The declaration is broader in scope than the resolution supporting the use of animals in research enacted by the American Association for the Advancement of Science.

The British declaration states:

In view of the threat to medical research posed by increasingly vocal and violent campaigns for the abolition of animal experimentation, we make the following declaration:

- Experiments on animals have made an important contribution to advances in medicine and surgery, which have brought major improvements in the health of human beings and animals.
- Continued research involving animals is essential for the conquest of many unsolved medical problems, such as cancer, AIDS, other infectious diseases, and genetic, developmental, neurological and psychiatric conditions.
- Much basic research on physiological, pathological and therapeutic processes still requires animal experimentation. Such research has provided and continues to provide the essential foundation for improvements in medical and veterinary knowledge, education and practice.
- The scientific and medical community has a duty to explain the aims and methods of its research, and to disseminate information about the benefits derived from animal experimentation.
- The comprehensive legislation governing the use of animals in scientific procedures must be strictly adhered to. Those involved must respect animal life, using animals only when essential and as humanely as possible, and they should adopt alternative methods as soon as they are proved to be reliable.
- Freedom of opinion and discussion on this subject must be safeguarded, but violent attacks on people and property, hostile campaigns against individual scientists, and the use of distorted, inaccurate or misleading evidence should be publicly condemned. ☞

(continued from page 16)

those rules are in place; after an institutional review the institution (not the government) should be the judge as to whether there is a conflict of interest; the funding agency should not second-guess the institution (as it has been done in some cases of scientific misconduct) after the institution has reported its findings.

It was said by a participant that conflict of interest perception vs. reality blurs the issue for the public. The perception is that government is ethical while scientists cannot be trusted. ☞

## APS Testifies on NSF Reorganization

On November 29–30, 1990, the National Science Foundation (NSF) Biological, Behavioral and Social Sciences (BBS) Task Force "Looking to the 21st Century" heard testimony on a proposed reorganization of the BBS Directorate. **C. Richard Taylor**, Harvard University, represented the Society at the hearing focusing on the needs of the physiological community. The message communicated to the Task Force was that it should "consider a structure that is most beneficial to the pursuit of science, rather than to the establishment of administrative domains. The scientific community is struggling under the weight of decreasing research support, making it difficult to gain new insights into biological processes and to recruit new students to our ranks. A reorganization of the Directorate should not add additional stress to an already fragile system." Copies of the testimony may be obtained from the APS Headquarters, 9650 Rockville Pike, Bethesda, MD 20814-3991.

## Call For Papers

Have you received your *Call for Papers*? Deadline for receipt of abstracts for the APS Conference Interactions of the Endocrine and Cardiovascular Systems in Health and Disease and the 13th Annual Meeting of the IUPS Commission on Gravitational Physiology is *May 14, 1991*. Contact FASEB Meeting Office, 9650 Rockville Pike, Bethesda, MD 20814-3998. Tel: 301-530-7010, Fax: 301-571-1855.

three barn owls. The research, supported by NIH, examines how barn owls use sound to visualize the terrain below, work that could lead to devices that would enable the blind to "see" based on sound.

Both the Marion County Circuit Court and the state Court of Appeals have ruled that PETA had no legal standing to contest the committee's decisions. The courts also said PETA had suffered no harm as a result of the decisions.

Animal activists groups have been denied standing in the federal courts, having had their appeals rebuffed by the U.S. Supreme Court after their petitions were rejected by both federal district and appeals courts. Standing is the recognition granted by a court to private citizens and organizations as plaintiffs with legally protectable and tangible interests at stake in civil litigation.

William M. Samuels

## British Scientists Support Animal Research Declaration

The British Association for the Advancement of Science has developed a declaration in support of the use of animals in research.

Eleven scientific organizations and six Nobel Laureates are among the original signatories to the declaration that outlines the issues animal researchers face in the United Kingdom. The declaration is broader in scope than the resolution supporting the use of animals in research enacted by the American Association for the Advancement of Science.

The British declaration states:

In view of the threat to medical research posed by increasingly vocal and violent campaigns for the abolition of animal experimentation, we make the following declaration:

- Experiments on animals have made an important contribution to advances in medicine and surgery, which have brought major improvements in the health of human beings and animals.
- Continued research involving animals is essential for the conquest of many unsolved medical problems, such as cancer, AIDS, other infectious diseases, and genetic, developmental, neurological and psychiatric conditions.
- Much basic research on physiological, pathological and therapeutic processes still requires animal experimentation. Such research has provided and continues to provide the essential foundation for improvements in medical and veterinary knowledge, education and practice.
- The scientific and medical community has a duty to explain the aims and methods of its research, and to disseminate information about the benefits derived from animal experimentation.
- The comprehensive legislation governing the use of animals in scientific procedures must be strictly adhered to. Those involved must respect animal life, using animals only when essential and as humanely as possible, and they should adopt alternative methods as soon as they are proved to be reliable.
- Freedom of opinion and discussion on this subject must be safeguarded, but violent attacks on people and property, hostile campaigns against individual scientists, and the use of distorted, inaccurate or misleading evidence should be publicly condemned. ☞

(continued from page 16)

those rules are in place; after an institutional review the institution (not the government) should be the judge as to whether there is a conflict of interest; the funding agency should not second-guess the institution (as it has been done in some cases of scientific misconduct) after the institution has reported its findings.

It was said by a participant that conflict of interest perception vs. reality blurs the issue for the public. The perception is that government is ethical while scientists cannot be trusted. ☞

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## Research in Physiology, NIDCD

The newly formed National Institute on Deafness and Other Communication Disorders (NIDCD; established in 1988) is the focal point at the National Institutes of Health (NIH) for the support of multidisciplinary research in hearing, balance, smell, taste, speech, voice, and language. The research spans all the levels of neural organization from reception to perception and encompasses the cellular communication within the internal milieu of organisms and their sensory communication with the external stimulus environment. The most common descriptor of the research is physiology, primarily neurophysiology and electrophysiology.

Research opportunities and needs related to physiology are highlighted below. Two of the recurrent themes are regeneration of sensory receptor cells and electrophysiological tests to assess the integrity of nerve pathway function in clinical settings.

### Hearing and Balance

The past decade has seen unprecedented progress in auditory physiology research, bringing about revolutionary changes in the conventional views of auditory structure and function. The cochlea, once considered a passive mechanical transducer of acoustic energy, is now known to play a very active role in sound transduction, tuning, and coding through chemically and sound-mediated outer hair cell motility. Startling evidence of this active, nonlinear process is found in otoacoustic emissions: tones of various frequencies *emitted* by the cochlea spontaneously or as distortion products of acoustic stimuli. The longstanding assumption that loss of the sensory epithelium of the cochlea is permanent and irreversible has been challenged by the discovery that regeneration and regrowth of damaged hair cells occurs as a normal process in birds and cold-blooded animals. Sophisticated labeling techniques and electron microscopy have enabled more precise definitions of afferent and efferent nerve fiber populations, their effects on signal transduction, and the neurotransmitter substances associated with cochlear activity. Progress has not been limited to the peripheral auditory system. The membrane properties of brain stem auditory nuclei cells have been analyzed with *in vitro* techniques that permit manipulation of the electrical and chemical environments of the cells. The representation and processing of the salient features of bat sonar signals have been described in auditory cortex and a neural map of auditory space has been constructed for the barn owl, providing greater insight into mechanisms of sound localization. The following paragraphs will elucidate some of these exciting developments.

The outer hair cells (OHCs) make up one of two mechanosensitive hair cell populations in the mammalian cochlea. The role in hearing of the OHC now appears to be one of modulating the micromechanical properties of the cochlea through two mechanisms: 1) interactions among hair cell

stereocilia at their tips; and 2) oscillatory length changes of the OHC in response to biochemical changes and transcellular oscillating electrical fields. First demonstrated in isolated hair cell preparations, the motile characteristics of the hair cells have now been demonstrated *in vivo*.

Decades ago, research indicated that production of sensory cells in the mammalian cochlea is limited to embryonic stages of development, leading to the conclusion that damage to the sensory cells later in life was irreparable. More recent studies have shown that both juvenile and adult birds and fish have the ability to regenerate sensory cells in damaged cochlear epithelia, even in species where production of those cells normally ceases early in embryonic development. Importantly, the regeneration process follows the same anatomical sequence as that observed in the normal embryonic process. The new cells have been shown to establish neural connections in the same way as the original cell population and maintain the original cells' response properties. The progenitor cells have now been identified in several animal models; these cells have comparable mammalian homologues. Experiments are under way to define the trigger events leading to regeneration and determine whether those events can be stimulated in mammals. If this important step is possible, unprecedented progress will have been made toward treatment of sensory hearing impairment.

One of the most persistent questions in the study of auditory evoked potentials concerns the generator source(s) for the various components of the response. It is now clear that the far field spatial distribution of potentials on the surface of the skull yields significant information about the generators of the potentials, *if* the temporal changes in the spatial distribution are also analyzed. In another approach to the generator question, inactivation of discrete central auditory nuclei by lidocaine injection followed by simultaneous multi-electrode recordings has demonstrated clear and predictable differences in the waveform morphology, latency, and amplitudes of the early and middle latency responses. In the guinea pig, surface middle latency response activity is concentrated over the temporal lobe and over the posterior midline. This response has been shown to reflect the activity of different generating systems than those associated with the auditory brain stem response or the late cortical evoked potential.

The vestibular system controls ocular and postural adjustments of the organism in response to positional changes of the head in space. Signals from the peripheral vestibular receptors in the inner ear are processed by central neural circuits (the latter receiving visual and proprioceptive inputs as well), generating the compensatory vestibular reflexes. Significant strides have been made recently in understanding the vestibular system in health and disease. Some of the important frontiers for further research in vestibular physiology and pathophysiology include the following: the mechanics of the vestibular labyrinth, the physiology of vestibular synaptic transmission, efferent vestibular control, vestibular hair cell and nerve regeneration, the assessment of vestibular

nerve function, and the neurophysiologic mechanisms subserving functional recovery following disease.

The mechanical properties of the vestibular endorgan receptor cells and the membranous structures covering them, the cupula, and the otolithic membrane need to be studied further. Recent progress has been made in delineating the structural basis for mechanical transduction in the frog otolithic membrane. Some of the physiologic properties of the primary vestibular nerve fibers have been related to the corresponding mammalian hair cell types I and II. A better understanding of hair cell static and dynamic properties will further our understanding of vestibular transduction and coding. The advanced physical techniques used so successfully in the study of cochlear mechanics need to be applied to descriptive studies of cupular and otolithic motion.

Since the significant discovery that auditory hair cells of birds can regenerate following injury, recent work has focused on vestibular hair cell and nerve regeneration. It is now known that the vestibular hair cells of certain fish are replenished almost continuously throughout the life cycle. The regenerated hair cells in the lateral line organ of the axolotl salamander have been postulated to originate from support cells. Vestibular nerve regeneration following trauma in the bullfrog has been shown to involve the reestablishment of "normal" connectivity rather than an adaptive reorganization. The structures and the biochemical and genetic mechanisms subserving regeneration need to be enthusiastically sought in the hope that we may eventually learn how to restore useful function to the human vestibular sense organ and nerve that have been traumatized or diseased.

## Smell and Taste

A number of properties of the chemical senses are proving useful for studying some general properties of neural systems. One of the hallmarks of the chemical senses is the continuous renewal of chemosensory receptor cells from precursor cells throughout the full life of vertebrates and the constant reestablishment of functional connections between newly generated receptor cells and their targets. This cycle of regeneration is highly conducive for addressing questions about the development, maintenance, and aging of receptor cell populations and about the trophic interactions between the newly generated receptor cells and their targets at neurophysiological and biochemical levels.

The smell system offers a special opportunity for understanding fundamental mechanisms of neural regeneration, brain development, and plasticity. The smell receptor neuron provides the only direct neural connection between the external environment and the forebrain and is the only projection neuron that is normally replaced from precursor cells. Receptor neuron destruction stimulates stem cell mitosis and differentiation of daughter cells into neurons. The differentiating cells become fully mature bipolar neurons at the time of synaptic contact with the olfactory bulb.

Trophic interactions among neurons and cells in the smell

system begin in early life and continue through life. Smell receptor neurons exhibit a powerful trophic influence on the formation of the olfactory bulb. Transplants of these neurons combined with their matrix remodel the morphology of non-olfactory regions of the brain. Receptor neuron neurogenesis and differentiation can occur without the bulb, but maturation of the receptor neuron appears to be incomplete at the neurophysiological and biochemical levels.

The plasmic transport system of the smell nerve potentially can provide a portal for the entry of pathogens and toxins into the brain and for the delivery of therapeutic substances to targets in the brain, avoiding the blood-brain barrier, which ordinarily prevents such access. Further, recent studies in adult rodents indicate that nerverlike cells migrate from the smell neuroepithelium to the brain. These cells might also be used to transport pharmacotherapeutics to the brain; these cells might become infected and transport the infection to the brain. Research opportunities include those to investigate the transport of pathogens and toxins and of therapeutic chemicals to the brain and to develop animal models to investigate these processes.

Taste cells have special properties that contribute to plasticity in the taste system and offer unique and as yet underutilized opportunities for the study of receptor cells that are renewed through life. Taste receptor cells are modified epithelial cells that renew themselves in a process of continuous turnover. Taste buds degenerate if the peripheral innervation is cut, and they regenerate upon reinnervation; recent results show that the chorda tympani nerve prevents filiform papillae development. Other research is focused on the role of cell-surface molecules in the taste cell-taste nerve contacts during the regeneration cycle and on the role of the taste nerve and taste cells in synapse formation. Studies involving denervation and cross-nerve reinnervation are continuing.

Recent studies indicate that early and continued restriction of dietary sodium in pregnant rats and their pups produced permanent neurophysiological and anatomical alterations in the solitary nucleus of the brainstem. The animals also consumed less salt solution than control counterparts in preference and conditioned aversion tests. Other neurophysiological studies demonstrate that the peripheral nerve responses to NaCl are of low magnitude during early development and gradually increase and that the developmental process can be blocked by the early restriction of dietary salt. Apparently, the normal increase in Na responsiveness is based on the acquisition of Na-ion channels that can be blocked by amiloride.

An important approach in the development of a complete understanding of sensory processes has been the combined use of physiological and psychophysical or behavioral measurements. In the assessment of smell, taste, and trigeminal nerve function, one of the major challenges has been how to get electrophysiological responses that are as good or better than behavioral or psychophysical responses, that is, how to get data that are comparable to the field potentials recorded routinely in audiology. The need for such measurements is especially urgent in testing prematurely born infants, infants, and perhaps toddlers, because, despite years



of arduous research, little is known about their chemosensory worlds. Also, difficulties have often arisen in interpreting the results of psychophysical tests of smell in patients with dementias, such as Alzheimer's disease, because it is difficult to differentiate the cognitive from the sensory deficits. Only a few groups of investigators are attempting to develop electrophysiological tests of chemosensory function. What is needed are valid, specific, sensitive, reliable, and standardized electrophysiological tests of smell, taste, and trigeminal nerve function in health and disease.

## Speech, Language, and Voice

Significant advances have been made in recent years in the understanding of normal and disordered speech production. Technological advances have provided instrumentation for measuring lip, jaw, velar, tongue, and pharyngeal movements during speech production, allowing recording of activity from many of the muscles used to produce these movements. One means of studying vocal tract movements during speech is a national center for speech research, the X-Ray Microbeam at Madison, Wisconsin. This center allows scientists to study movements inside the mouth, by utilizing small pellets that are traced by the microbeam and displayed on a computer screen in a reconstruction of the inside of the mouth. Movements of the tongue, the major speech articulator used also for chewing and swallowing, can be measured. Other techniques such as miniature magnetometers and ultrasound are also being used to study tongue, pharyngeal and velar movements during speech. Such technologies have the potential for increasing understanding of normal speech as well as speech impairments.

Relatively little is known about the neurophysiology of normal or disordered speech production. Contributing factors to this dearth of knowledge include the biomechanical complexities of the vocal tract, the complex nature of the nervous system involved in vocal tract control, the characteristically complex motor skills involved in speaking, the absence of an animal model for research, and finally, the small number of investigators in the area of speech motor control. Research needs or foci in speech physiology extend across a number of areas.

Investigations are needed into the neural pathways involved in the planning, programming, and execution of movements of the vocal tract for speech production. Physiologic studies in animals can characterize firing patterns of central nervous system neurons during vocalization. Such studies can relate those firing patterns to specific peripheral aspects of vocalization. Electrophysiological, morphological, and psychophysical analyses of sensory mechanisms associated with orofacial sites are needed, given recent evidence that sensory influence plays an important role in orofacial motor control. This control occurs in both the planning stages before initiation of movement and in the moment-to-moment shaping of motor output. Some disorders of speech may be associated with deficits in processing sensory inputs.

A fuller understanding is needed of how language in all of its many aspects is mediated by anatomical structures of the brain and their physiology. For example, individuals vary widely in their recovery of language capacities after apparently similar brain lesions. The mechanisms by which recovery of language abilities occurs, following brain lesions, need to be investigated by PET scan imaging of brain metabolism. The role of the right hemisphere and residual function of structures in the left hemisphere during the recovery process needs to be documented further.

Laryngeal and respiratory physiology represents the foundation of existing knowledge and serves as the basis of future investigations of voice production. The next generation of measurement tools to provide physiologic information on vocal fold vibration and airflow modulation is now undergoing further development in voice laboratories. With the electroglottograph, scientists can now assess whether the vocal folds meet during vibration. With photoglottography, the area of glottal opening between the vocal folds can be measured. Scientists are making recordings of the electrical activity of the laryngeal muscles in normal and disordered speakers, to determine the role of each muscle in vocal fold movement.

Research needs in voice physiology include studies employing recent technologies that would provide direct insight into the specialized functions of the human larynx, with specific regard to receptor identification, reflex organization, central control, and muscle behavior in health and disease. Information is needed about the modification of sensory and muscle action feedback to the motoneuron pools during different laryngeal gestures in higher level primates and humans.

## Conclusion

Here only a brief overview could be provided of the sensory and motor events related to hearing, balance, smell, taste, speech, voice, and language function. Additional elaborations on the physiological research opportunities and needs within the numerous, broad, and multidisciplinary research interests of the institute are included in its announcements in the *NIH Guide*. Some of these recent directions in research are the study of regeneration of sensory receptors, neurological and neuromuscular aspects of swallowing, progressive hearing impairment, biochemistry and pharmacology of the auditory and vestibular systems, and the central taste pathways. The array of physiological techniques bearing on these research directions encompasses the traditional methods of physiology, for example, neurophysiological tests of function in clinical settings, and those of molecular physiology, genetics, and immunology within the context of problems of contemporary structure-function relations.

Jack Pearl  
Maureen Hannley  
Judith A. Cooper  
Daniel Sklare

## Johnson Receives Honorary Degree

**Richard A. Cohen**, professor of medicine and physiology at the Boston University School of Medicine, was elected to the board of directors of Research!America, the Alexandria-based alliance for discoveries in health. Cohen is also president of the American Federation for Clinical Research.

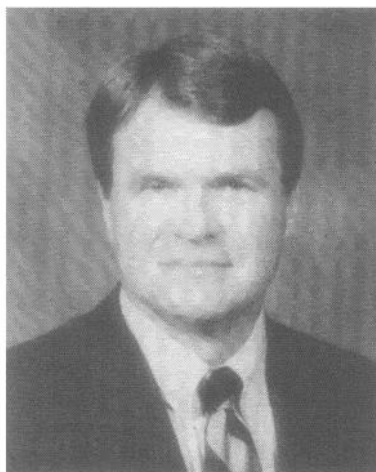
**Leonard F. Cipriano**, formerly with the Lockheed Engineering and Sciences Company, has joined the Center for Space and Advanced Technology, Fairfax, VA.

Corresponding member, **Pompeo Volpe**, has returned to the Istituto di Patologia Generale, Padova, Italy.

Formerly at the Washington University School of Medicine, **Ellen McMahon** has moved to Searle Research and Development, Monsanto Company, St. Louis, MO.

APS member, **Ying-Tung Lau**, Michigan Cancer Foundation, has moved to Chang Gung Medical College, Department of Physiology, Taoyuan, Taiwan.

**Richard C. Rose** of the University of North Dakota has joined the Department of Physiology and Biophysics, Chicago Medical School.

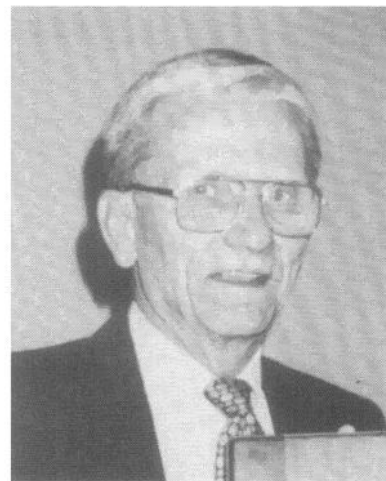


**Leonard R. Johnson** received the degree Doctor of Medicine (Honors Causa) from the University of

Cracow's Copernicus Medical School in Poland during ceremonies on September 24, 1990. The honorary degree was awarded in recognition of Johnson's distinguished research resulting in the discovery and explanation of gastrointestinal (GI) hormone function as regulators of GI mucosal growth. He was also selected for honorary membership in the Polish Physiological Society and received an honorary diploma and the Napoleon Cybulski medal at the opening ceremonies of the Congress of the Polish Physiological Society. An APS member since 1970, Johnson is professor and chairman of the Department of Physiology and Biophysics, University of Tennessee.

## Bishop Wins the Humboldt Research Award

**Vernon S. Bishop** from the University of Texas Health Science Center, at San Antonio, has won the prestigious Humboldt Research Award. The award from the Alexander von Humboldt Foundation in Germany is given to senior United States scientists. It will allow Bishop, who is primarily interested in cardiovascular pharmacology and physiology, to spend a year at the University of Heidelberg and the University of Dusseldorf in Germany to work with research colleagues. Bishop, President of the APS in 1989 and a member since 1968, is editor of the *American Journal of Physiology: Heart and Circulatory Physiology*.



## APS Members Receive ASME Melville Medal

**Shu Chien**, professor of bioengineering and medicine, **Geert W. Schmid-Schoenbein**, professor of bioengineering, and **Richard Skalak**, professor of bioengineering, University of California at San Diego, were among the five recipients of the Melville Medal of the American Society of Mechanical Engineers (ASME) during its annual meeting in Dallas. The award is given for the best original paper or thesis on a mechanical engineering subject presented for discussion and publication during the preceding year. They received the award for their paper, "Passive Deformation Analysis of Human Leukocytes."

Chien is President of the APS and has been a member since 1967. Schmid-Schoenbein and Skalak were elected to Society membership in 1981 and 1984, respectively.

### APS/FASEB Spring Meeting, Atlanta, Georgia

**Monday, April 22, 1991  
4:45 PM**

#### Bowditch Lecture

**"Renal Afferent Inputs to Ascending Spinal Pathways"**

**W. Steve Ammons**  
Associate Professor of Physiology  
Jefferson Medical College  
Philadelphia, Pennsylvania

**Wednesday, April 24, 1991  
4:45 PM**

#### Physiology in Perspective Walter B. Cannon Memorial Lecture

**"Atriopeptin: Discoveries  
and Implications"**

**Philip Needleman**  
Vice President  
Monsanto Corporate Research  
Monsanto Company  
St. Louis, Missouri

(Sponsored by the Grass Foundation)

**Research Scientists.** The National Research Laboratory, the Navy's corporate research laboratory, is seeking highly motivated scientists to fill postdoctoral and sabbatical positions for expanding programs in the Center for Bio/Molecular Science and Engineering. The Center conducts multidisciplinary research in biotechnology using the techniques of modern molecular biology, biophysics, chemistry, and engineering to fabricate biosensors, biomaterials, and advanced systems. Current research areas include: biophysical chemistry of membranes; antibody, DNA probe, and receptor-based technologies for biosensor design and engineering; genetic engineering of biomaterials; archaeobacterial and glycolipids as models of ultra-stable membranes; physical properties of thin films and surfaces; microwave devices, ultramicroelectrodes and electron emitters based on metallized composites; molecular self-assembly of sub-micron sized particles; selective patterning of biological materials (antibodies, cells) on solid substrates; blood substitutes and wound repair materials; and novel deep UV and electron beam patterning processes and materials.

U.S. citizenship is required for National Research Council and Office of Naval Technology Postdoctoral Fellowships. *Information:* Dr. J. Schnur, Code 6090, Naval Research Laboratory, Washington, DC 20375-5000. Tel: 202-767-3344, Fax 202-767-1295.

**Instructor, Biological Sciences** with emphasis on anatomy and physiology. The St. Petersburg Junior College, Tarpon Springs Center, is seeking to fill a tenured track position with a starting date of August 1991. Salary is dependent upon academic degree (beginning Masters degree is \$28,476 for 10½ months). St. Petersburg Junior College is fully accredited with a current enrollment of 22,600 credit students at four campuses/centers. The Tarpon Springs Center, established in 1970, has an enrollment of 2,500 credit students. Interested candidates should contact Nick M. Billiris, 600 Klosterman Road, Palm Harbor, FL 34683. Tel: 813-791-5734.

**Junior Research Assistant**, BA in Biology, Physiology or Medicine. Herbal research project conducted on healthy volunteers and volunteers suffering from AIDS and cancer related tumors. Explain protocols to volunteers; review modern and ancient literature pertinent to herbs studied; supervise or perform physiologic studies on the volunteers; tabulate and analyze data obtained and assist with drafting and editing final reports. Position in Panama City.

### Positions Available

There is a \$25 charge per issue for each position listed. A check or money order payable to the American Physiological Society must accompany the copy. Purchase orders will not be accepted unless accompanied by payment. Ads not prepaid will not be printed. Copy must be typed double-spaced and limited to 150 words. All copy is subject to the editorial policy of *The Physiologist*. EOAAE indicates Equal Opportunity/Affirmative Action Employer and appears only where given on original copy. Copy deadline: copy must reach the APS office before the 15th of the month, 2 months preceding the month of issue (e.g., before February 15 for the April issue). Mail copy to APS, 9650 Rockville Pike, Bethesda, MD 20814.

6 months experience or 1 year in similar research project, \$424/wk. Send resume to Job Service of Florida, 1307 N. Monroe St., Tallahassee, FL 32303. Ref. Job Order FL-058941.

**Pre- and Postdoctoral Training, Developmental Biology.** Positions for research training in pregnancy, birth, and fetal development are available in our multidisciplinary research group. Areas of expertise include molecular endocrinology of pregnancy, uterine smooth muscle biology, control of respiratory and cardiovascular function in the fetus and newborn, maturation of the central nervous system, and placental development and function. Techniques include whole animal physiology, receptor autoradiography, cell culture, molecular biology, electrophysiology and patch clamp. Send application letter, curriculum vitae, and names of three references to: Dr. S. J. Lye, Division of Perinatology, Samuel Lunenfeld Research Institute, Mount Sinai Hospital, 600 University Avenue, Toronto, Ontario, M5G 1X5, Canada.

**Lecturers in Physiology or Anatomy/Biomechanics.** The UCLA Department of Kinesiology in the Life Sciences Division of the College of Letters and Science invites applications for three full-time lecturers. Individuals with experience in teaching mammalian physiology, systems physiology, performance physiology, or biomechanics/anatomy are encouraged to apply. Appointees will teach at both the undergraduate and graduate levels. Applicants should have a PhD or MD degree, and the salary will be commensurate with qualifications. These one-year positions will begin July 1, 1991. The deadline for receipt of applications is March 15, 1991. Submit

your CV and a cover letter that includes the names and addresses of three individuals who may be contacted for letters of reference to: Dr. Ronald F. Zernicke, Department of Kinesiology, 2859 Slichter Hall, UCLA, Los Angeles, CA 90024-1568. *The University of California is an Equal Opportunity/Affirmative Action Employer.*

**Assistant/Associate Professor, Vertebrate Physiology.** The Department of Biology, Westmont College, Santa Barbara has a tenure track faculty opening for August 1991. Research speciality open but prefer individual interested in environmental physiology, neurobiology, or behavioral endocrinology. Person will teach animal biology, general physiology, plus a course from speciality.

Westmont College is a Carnegie Level I "national" liberal arts college committed to stimulating vigorous intellectual inquiry in the context of the historic Christian faith. Science programs have a tradition of highly successful research involving faculty and students, supported by a new science facility, an institutional commitment to research in the undergraduate teaching environment, and a record of attracting national funding.

PhD required and postdoctoral experience is preferred; women and minorities are especially encouraged to apply. Send letter, vita with names of references, and statements of teaching philosophy and scholarly interest to Physiologist Search Committee, Department of Biology, Westmont College, Santa Barbara, CA 93108.

### BOOKS RECEIVED

*Best and Taylor's Physiological Basis of Medical Practice.* (12th Ed.) John B. West (editor). Baltimore, MD: Williams & Wilkins, 1991, 1170 pp., illus., index, \$55.00.

*Skeletal Muscle in Health and Disease.* David A. Jones and Joan M. Round. New York, NY: St. Martin's, 1990, 221 pp., illus., index, \$49.95, Hardcover. \$17.95, Paperback.

*Drug Discovery: A Casebook and Analysis.* Robert A. Maxwell and Shohreh B. Eckhardt. Clifton, NJ: Humana, 1990, 439 pp., illus., index, \$79.50.

*Inflammatory Indices in Chronic Bronchitis.* Carl G. A. Persson, Ralph Brattsand, Lauri A. Laitinen, and Per Venge (editors). Basel: Karger, 1990, 294 pp., illus., index, \$78.00.

*Body and Brain: A Trophic Theory of Neural Connections.* Dale Purves. Cambridge, MA: Harvard Univ. Press, 1988, 231 pp., illus., index, \$14.95.

*Human Physiology (2nd ed.)*

Robert F. Schmidt and Gerhard Thews (editors)  
New York: Springer-Verlag, 1989, 825 pp., \$79.00.

*Human Physiology* is a textbook written primarily for medical students. The first edition (1983) was the English translation of the German textbook, *Physiologie des Menschen*, which was first published by Hermann Rein in 1936. The second edition has been revised, reorganized, updated, and expanded by about 100 pages. The book represents the combined efforts of 25 German authors.

*Human Physiology* is a thorough and well-organized textbook. Classic physiology is emphasized throughout the book's 34 chapters. An introductory section contains various topics in cell physiology. The emphasis of this section is on membrane transport, membrane electrical activity, and synaptic transmission, with little discussion of other intracellular events. This section is followed by a section on muscle and neurophysiology. These chapters are notable for their breadth and depth of material. Almost 150 pages are devoted to sensory physiology. The chapter on general sensory physiology includes a number of classic theories of psychophysics and even has a paragraph on parapsychology. Thirst and hunger are treated as special senses. The chapter on the autonomic nervous system (ANS) goes well beyond the usual discussion of the peripheral ANS by including detailed information on central autonomic mechanisms. The section on neural and hormonal regulation contains a chapter devoted to principles of regulation and control theory. However, the concept of homeostasis is underemphasized throughout most of the book. The remainder of the book covers the circulatory and respiratory systems, energy balance, digestion, excretion, and reproduction. The chapters on reproduction lack the detail found in other chapters.

The experimental nature of physiology is emphasized throughout the text. The authors have incorporated numerous figures containing actual or stylized experimental data. Mathematical formulas are abundant in many chapters. Chemical structures and biochemical pathways are almost totally absent. For example, the biosynthesis of steroid hormones is briefly described,

yet the structure of a steroid is never shown. This approach is explained by one of the authors, who states that "structural formulas can be found in textbooks of biochemistry." Brief references to human medicine and pathophysiology are common.

Three chapters stand out as unique among medical physiology textbooks. One is a short chapter on information theory. This chapter is complex and very mathematically oriented, emphasizing the importance of redundancy and parallel transmission of information. The chapter on work physiology is very interesting and practical, discussing physical and mental performance and describing the physiological adjustments to work. Additional topics included in this chapter are performance limits, exhaustion and fatigue, circadian rhythms, training, and aptitude testing. The chapter on aging is a valuable addition to the text. The chapter contains a brief discussion of life expectancy and theories of aging, followed by a system-by-system description of age-related changes in structure and function. Unfortunately, there is no attempt to tie these concepts together around unifying themes, such as loss of enzymatic activity or replacement of functional tissue with connective tissue.

The writing style of *Human Physiology* is succinct; it reads smoothly and holds the reader's interest. New terms and important points are emphasized with bold type or italics. Occasional small-print paragraphs provide more detailed discussions of certain topics. There are over 600 figures, almost all small, two-color figures. Some of the figures are very detailed, with too much information and lengthy figure legends. References found at the end of each chapter include textbooks, review articles, and original research articles. The most recent references are dated 1987. Several classic works are cited. The index is very thorough, enhancing the value of this book as a reference.

*Human Physiology* has a solid grounding in physiological principles and contains a wealth of information in a readable style. Students will benefit from the inclusion of both experimental and clinical approaches to physiology found in this excellent textbook.

Kip L. McGilliard  
Department of Zoology  
Eastern Illinois University

### Future Meetings

#### 1991

APS Conference:  
Interactions of the Endocrine and  
Cardiovascular Systems in Health  
and Disease

Sept. 29–October 3  
San Antonio, TX

#### 1992

FASEB Spring Meeting

April 5–10  
Anaheim, CA

APS Conference:  
Integrative Biology of Exercise

September 22–26  
Colorado Springs, CO

APS Conference:  
The Cellular and Molecular Biology  
of Membrane Transport

November 4–10  
Orlando, FL

#### 1993

FASEB Spring Meeting

March 28–April 1  
New Orleans, LA

#### 1994

FASEB Spring Meeting

April 24–29  
Anaheim, CA



# APS Sustaining Associate Members

The Society gratefully acknowledges the contributions received from Sustaining Associate Members in support of the Society's goals and objectives



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## Scientific Meetings and Congresses

**Second International Conference on Sodium/Calcium Exchange**, Baltimore, MD, April 8-10, 1991. *Information:* Marketing Department, New York Academy of Sciences, 2 East 63rd Street, New York, NY 10021, Tel: 212-838-0230, Fax: 212-888-2894.

**37th Annual Meeting, American Society for Artificial Internal Organs**, Chicago, IL, April 25-27, 1991. *Information:* ASAI0, 2200 North Federal Highway, Suite 201, Boca Raton, FL 33431-7710. Tel: 407-391-8589.

**Magnesium in Clinical Medicine and Therapeutics: State of the Art - 1991 and Workshop on Methods for Assessing Magnesium in Body Fluids, Cells and Tissues**, La Jolla, CA, May 2-4, 1991. *Information:* B. M. Altura, Box 31, SUNY Health Science Center, 450 Clarkson Avenue, Brooklyn, NY 11203, Tel: 718-270-2618 or Leo Galland, 41 East 60th Street, New York, NY 10022, Tel: 212-308-6622.

**Conference on Neurotoxins and Neurodegenerative Disorders**, Philadelphia, PA, May 6-8-1991. *Information:* Richard Heikkila, New York Academy of Sciences, 2 East 63rd Street, New York, NY 10021, Tel: 212-838-0230, Fax: 212-888-2894.

**7th BMSR Workshop, "Models of Complex Respiratory Dynamics in Sleep and Wakefulness,"** Anaheim, CA, May 11, 1991. *Information:* Gabriele H. Larmon, BSR, University of California, School of Engineering, Los Angeles. Tel: 213-740-0839, Fax: 213-740-0343.

## ANNOUNCEMENTS

### Senior and Postdoctoral Research Associateships

The National Research Council (NRC) announces the 1991 Resident, Cooperative, and Postdoctoral Research Associateship Programs for research in the sciences and engineering to be conducted on behalf of 30 federal agencies or research institutions whose 115 participating research laboratories are located throughout the United States. The programs provide opportunities for PhD scientists and engineers of unusual promise and ability to perform research on problems largely of their own choosing yet compatible with the research interests of the sponsoring laboratory.

Approximately 450 new full-time Associateships will be awarded on a competitive basis in 1991 for research in chemistry; earth and atmospheric sciences; engineering and applied sciences; biological, health, and behavioral sciences and biotechnology; mathematics; space and planetary sciences; and physics. Most of the programs are open to both US and non-US nationals, and to both recent PhD recipients and senior investigators.

Awards are made for 1-2 years, renewable to a maximum of 3 years; senior applicants who have held the doctorate at least 5 years may request a shorter period. Annual stipends for recent PhD's for the 1991 program year range from \$27,150 to \$42,000

depending upon the sponsoring laboratory, and will be appropriately higher for senior Associates. Financial support is provided for allowable relocation expenses and for limited professional travel during duration of the award. The host laboratory provides the Associate with programmatic assistance including facilities, support services, necessary equipment, and travel necessary for the conduct of the approved research program.

### NASA/NSF Research Projects

On October 11-12, 1990, the National Aeronautics and Space Administration (NASA) and the National Science Foundation (NSF) held a science working group meeting to discuss future joint projects to be conducted in polar areas that are applicable to long duration space flight, as well as beneficial to future polar science. Some of the areas of interest are circadian rhythms and sleep disturbances; epidemiology of infectious illness; energy balance and thermoregulation; telecommunication; habitat design; workload assessment; multicultural factors; group dynamics; and mental health. A joint NASA/NSF research announcement is planned for release in March 1991 for research starts in winter 1992. *Information:* Dr. J. Stoklosa, NASA, Manager, Biomedical Programs, 202-453-1527, or Dr. P. Penhale, NSF, Manager, Polar Biology and Medicine Program, 202-357-7894.